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**APPLICANT(S):** Peter ELLENBERGER

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**FROM:** Vincent A. Cortese, Esq.

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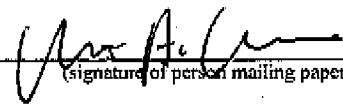
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January 15, 2010

(date)

Application Serial No.: 10/546,551

Docket No. MBZ-0513

Applicant: Peter ELLENBERGER

Final Office Action Mailing Date: November 13, 2009

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**DRAFT**

**PROPOSED AMENDMENTS TO THE CLAIMS**

1. (Currently Amended) A method of boring a tunnel by means of an earth pressure balance tunnel boring machine, comprising the injection at a cutting head of the earth pressure balance tunnel boring machine of a foamed aqueous surfactant solution and an aqueous solution of a water-soluble acrylic acid-based polymer, wherein the foamed aqueous surfactant solution is injected at a rate of from 0.2 to 4 Kg dry material per cubic meter of excavated soil, and wherein the acrylic acid-based polymer is injected at a rate of from 0.05 to 2 Kg dry polymer per cubic meter of excavated soil.
2. (Previously Presented) The method according to claim 1, in which the foamed aqueous surfactant solution and the aqueous solution of a water-soluble acrylic acid-based polymer are added as a single material.
3. (Currently Amended) A foaming solution for use with earth pressure balance tunnel boring machines, comprising an aqueous solution of an acrylic acid-based polymer and an anionic surfactant ~~selected from sulphate esters, sulphate ethers and sulphonates~~, wherein the acrylic acid-based polymer has a molecular weight from 2,000 to 20,000, and wherein the surfactant comprises at least one of C<sub>8-22</sub> fatty alcohol sulphate salts, C<sub>8-22</sub> fatty alcohol ether sulphate salts, or mixtures thereof.
- 4.-7. (Canceled)
8. (Previously Presented) The foaming solution according to claim 3, wherein the surfactant comprises monoisopropanol ammonium lauryl alcohol sulphate.
9. (Currently Amended) The foaming solution according to claim [[7]]3, wherein the C<sub>8-22</sub> fatty alcohol ether sulphate salts comprise at least one of:
  - a. lauryl alcohol;
  - b. an ether formed with an alkylene oxide chain of from 1 to 3 alkylene oxide units;  
or
  - c. a salt forming cation selected from alkali metal, magnesium and alkanolamine.

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10. (Cancelled)

11. (Previously Presented) The foaming solution according to claim 3, wherein the acrylic acid-based polymer has a molecular weight from 2,000 to 10,000.

12. (Previously Presented) The foaming solution according to claim 3, wherein the acrylic acid-based polymer is derived from acrylic acid.

13. (Previously Presented) The foaming solution according to claim 3, wherein the acrylic acid-based polymer is a salt.

14. (Previously Presented) The foaming solution according to claim 13, wherein the acrylic acid-based polymer salt comprises a monovalent cation that is at least one of sodium, potassium, ammonium, tertiary amine, quaternary amine or mixtures thereof.

15. (Currently Amended) The method according to claim 1A method of boring a tunnel by means of an earth pressure balance tunnel boring machine, comprising the injection at a cutting head of the earth pressure balance tunnel boring machine of a foamed aqueous surfactant solution and an aqueous solution of a water-soluble acrylic acid-based polymer, wherein the foamed aqueous surfactant solution and the aqueous solution of water-soluble acrylic acid-based polymer are added separately.

16. (Cancelled)

17. (Previously Presented) The method according to claim 1, wherein the foamed aqueous surfactant solution is injected at a rate of from 0.5 to 2 Kg dry material per cubic meter of excavated soil.

18. (Cancelled).

19. (Previously Presented) The method according to claim 1, wherein the acrylic acid-based polymer is injected at a rate of from 0.1 to 1 Kg dry polymer per cubic meter of excavated soil.

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20. (Previously Presented) The method according to claim 1, wherein the acrylic acid-based polymer is injected at a rate of from 0.2 to 0.5 Kg dry polymer per cubic meter of excavated soil.

21. (New) The method according to claim 1, wherein the foamed aqueous surfactant solution comprises an anionic surfactant selected from sulphate esters, sulphate ethers and sulphonates.

22. (New) The method according to claim 21, wherein the surfactant comprises a lauryl ether sulphate, whose ether portion consists of two oxyethyl units maximum.

23. (New) The method according to claim 21, wherein the surfactant comprises a polyalkylene alkyl ether sulphate, and wherein the polyalkylene oxide chain of the polyalkylene alkyl ether sulphate has an average chain length of from 1-3 alkylene oxide units.

24. (New) The method according to claim 21, wherein the surfactant comprises at least one of α-olefin sulphonate, C<sub>8-22</sub> fatty alcohol sulphate salts, C<sub>8-22</sub> fatty alcohol ether sulphate salts or mixtures thereof.

25. (New) The method according to claim 21, wherein the surfactant comprises monoisopropanol ammonium lauryl alcohol sulphate.

26. (New) The method according to claim 21, wherein the acrylic acid-based polymer is an acrylic acid-based polymer salt comprising a monovalent cation that is at least one of sodium, potassium, ammonium, tertiary amine, quaternary amine or mixtures thereof.

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## **REMARKS**

Applicant wishes to note that the Office, in the Office Action mailed November 13, 2009, indicated that claims 8, 9 and 15-20 would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims. For the Examiner's information and in order to facilitate discussion, the claims are proposed to be amended as follows:

- Claim 1 is proposed to be amended by incorporating the subject matter of claims 16 and 18. Claims 16 and 18 are proposed to be canceled.
- Claim 3 is proposed to be amended by incorporating the subject matter of claim 7, except that claim 7's previous recitation of  $\alpha$ -olefin sulphonate has not been incorporated into proposed claim 3. Claim 7 is proposed to be canceled.
- Claims 4-6 are proposed to be canceled in view of the proposed amendments to claim 3.
- Claim 9 is proposed to be amended in order to recite dependency from claim 3.
- Claim 15 is proposed to be amended into independent form, incorporating the subject matter of previous claim 1.
- Claims 21-26 are proposed to be added, ultimately dependent from allowable claim 1. Proposed claim 21 incorporates subject matter from claim 3. Proposed claim 22 incorporates subject matter from claim 4. Proposed claim 23 incorporates subject matter from claims 5 and 6. Proposed claim 24 incorporates subject matter from claim 7. Proposed claim 25 incorporates subject matter from claim 8. Proposed claim 26 incorporates subject matter from claims 13 and 14.